UNIVERSITY OF JOHANNESBURG

FACULTY OF SCIENCE

DEPARTMENT OF QUALITY & OPERATIONS MANAGEMENT
DEPARTMENT OF BIOTECHNOLOGY & FOOD TECHNOLOGY
DIPLOMA IN FOOD TECHNOLOGY

MODULE FTN3BFP
FOOD PRODUCTION 3
CAMPUS **DFC**

NOVEMBER 2014 EXAMINATION

DATE: 01/11/2014 **SESSION: 12:30 – 15:30**

ASSESSORS **MRS C MUGOVA**
MS DJA METCALFE

EXTERNAL MODERATOR **PROFESSOR D KRUGER**

DURATION 3 HOURS **MARKS: 184**

NUMBER OF PAGES: 5 PAGES PLUS AN ANSWER SHEET OF 2 PAGES.

INSTRUCTIONS: CALCULATORS ARE PERMITTED (ONLY ONE PER STUDENT).

REQUIREMENTS: 2 ANSWER SCRIPTS PER STUDENT (1 PER SECTION).

/2…

SECTION A OPERATIONS MANAGEMENT (ASSESSOR: MRS C. MUGOVA)

INSTRUCTIONS:

1. Answer in a **separate examination book** and clearly mark 'OPERATIONS MANAGEMENT'.
2. Answer **ALL** of the six questions.
3. Ensure your student number appears on all material you submit.
4. Questions may be answered in any sequence but **sub-sections must be answered together.**

QUESTION 1

1.1 Compare the traditional and the new trends in operations management. (6)

1.2 Distinguish between production and productivity. (2)

1.3 Jabulani Sithole operates a bakery in Eastern Cape, South Africa. Because of its excellent product and excellent location, the demand has increased by 25% in the last year. On far too many occasions, customers have not been able to purchase the bread of their choice. Because of the size of the store, no new ovens can be added. At a staff meeting, one employee suggested ways to load the ovens differently so that more loaves can be baked at one time. This new process will require that the ovens be loaded by hand, requiring additional manpower. This is the only thing to be changed. If the bakery makes 1 500 loaves per month with a labour productivity of 2.344 loaves per labour-hour:

a) Determine the labour-hours for the current process. (2)
b) Determine the labour-hours for the new process. (4)
c) How many workers will Jabulani need to add for the new process? (*Hint*: Each worker works 160 hours per month). (3)

1.4 Identify and briefly describe the approach to job design where workers are able to suggest ways to improve their processes as in 1.3 above. (3)

[20]

QUESTION 2

2.1 Discuss the strategic importance of forecasting. (3)

2.2 Due to unhealthy eating habits in a certain community in Worthcharts, Burdan, the demand for heart transplant surgery at a local hospital has increased steadily in the past few years:

Year	1	2	3	4	5	6
Heart Transplants	45	50	52	56	58	?

The Director of Medical services at the hospital predicted 6 years ago that the demand in year 1 would be 41 surgeries.

a) Use exponential smoothing, with a smoothing constant of 0.6 to develop forecasts for years 2 through 6. (3)

b) Use a 3-year moving average to forecast demand in years 4, 5 and 6. (2)

c) Use a weighted 3-year moving average with weights of 0.1; 0.3; and 0.6 to forecast demand in years 4, 5 and 6. (3)

d) With MAD as the criterion, which of the three forecasting methods is the best? (4)

2.3 Discuss the considerations for a good layout design. (5)

[20]

QUESTION 3

3.1 What are the assumptions underlying the basic economic order quantity model? (6)

3.2 Universal Electronics supplies microcomputer circuitry to a company that incorporates microcomputers into refrigerators and other home appliances. One of the components has an annual demand of 250 units, and this is constant throughout the year. Carrying cost is estimated to be R1 per unit per year, and ordering cost is R20 per order.

a) To minimize cost, how many units should be ordered each time an Order is placed? (4)

b) How many orders are needed in the first year? How many orders must be placed in the second year and why? (5)

c) What is the average inventory if costs are minimized? (2)

3.3 Identify and briefly describe any three technologies that are used to enhance production processes. (3)

[20]

QUESTION 4

4.1 Define design capacity; utilization; effective capacity; and efficiency. (4)

4.2 A bakery oven was designed to produce 7 000 rolls per day, but is limited to making 6 000 rolls per day because of the time needed to change trays between different types of rolls. What is its utilization? (3)

4.3 If a plant has an effective capacity of 6 500 and an efficiency of 88%, what is the actual (planned) output? (3)

4.4 Briefly describe the concept of break-even analysis. (4)

4.5 Given the data below, calculate: a) BEP(x); b) BEP(R); c) the profit at 100 000 units. (6)
P = R8 per unit V= R4 per unit F = R50 000

[20]

QUESTION 5

5.1 What is the role of inspection in quality management? (3)

5.2 Identify the various points that inspections can take place in the supply chain of a food product. (7)

5.3 Assignable variation in a process can be traced to a specific reason. List the potential sources of assignable variation in a process. (5)

5.4 Explain how a control chart is used as a tool for quality improvement. (5)

[20]

QUESTION 6

6.1 Using the information given in figure 1 below, what is the lead time for item A? (3)

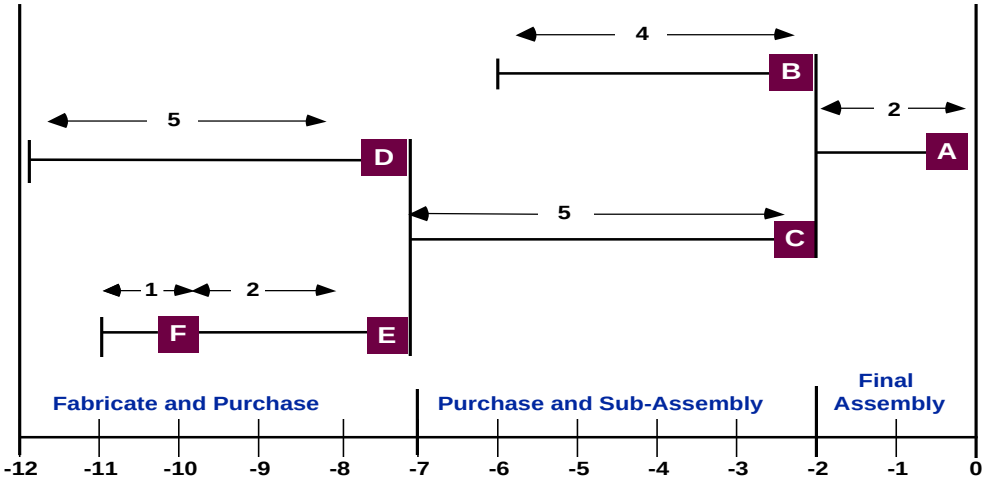

Figure 1

6.2 Identify the following in figure 1 above: parents; subassemblies; children. (6)
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6.3 Identify five specific requirements of an effective MRP system. (5)

6.4 What are the typical benefits of an ERP system? (6)

[20]

TOTAL SECTION A: 120

SECTION B FOOD LEGISLATION (ASSESSOR: MS DJA METCALFE)

INSTRUCTIONS:

1. Answer this section in a separate examination book clearly marked 'FOOD LEGISLATION'.
2. Hand the completed answer sheet in at the back of the examination book.
3. Answer ALL of the questions.
4. Questions may be answered in any sequence but all sub-sections of a question must be answered together.

QUESTION 1

1.1 Name three international agencies that influence global food regulation and control. (3)

1.2 Write a paragraph analysing the role of food legislation as a component of food regulation and control. (12)
[15]

QUESTION 2

Complete the answer sheet provided by stating the Republic of South Africa (RSA) Department that is responsible for administration of the Acts listed and provide a full description of the scope and purpose of each of the Acts. **[24]**

QUESTION 3

Write a paragraph detailing the role and functions of the Directorate of Food Control (DFC) within the Department of Health. **[6]**

QUESTION 4

Summarise the following requirements of regulation 146 of 2010 of the Foodstuff, Cosmetics and Disinfectants Act (Act 54 of 1972) in your own words.

4.1 Identification of product. (5)

4.2 Order of list of ingredients. (5)

4.3 Batch identification and date marking. (4)

4.4 Common allergens (5)

[19]

SECTION B: 64
100%: 60

STUDENT NAME: _____
STUDENT NUMBER: _____

FOOD PRODUCTION III FTN3BFP
ANSWER SHEET: SECTION B, QUESTION 1.

ACT	**DEPARTMENT RESPONSIBLE FOR ADMINISTRATION (16 x ½ MARK EACH = 8)**	**PURPOSE / SCOPE OF THE LEGISLATION (8 x 2 MARKS EACH FOR EACH FULL DESCRIPTION = 16)**
Agricultural Products Standards Act (Act 119 of 1990)		
Consumer Protection Act (Act 28 of 2009)		
Genetically Modified Organisms Act, (Act 15 of 1997); Genetically Modified Organisms Amended Act (Act 23 of 2006)		
International Health Regulations Act, (Act 28 of 1974)		

ACT	DEPARTMENT AND DIRECTORATE RESPONSIBLE FOR ADMINISTRATION	PURPOSE / SCOPE
Liquor Products Act (Act 60 of 1989)		
Meat Safety Act, (Act 40 of 2000)		
Occupational Health and Safety Act, (Act 85 of 1993).		
Trade Metrology Act, (Act 77 of 1973)		